SIMULIUM FEEDING UPON CHRYSALIDS.

BY DR. H. A. HAGEN.

In Colville Valley, Washington Territory, July 24th, I had the chance to observe the destruction of the pine trees (*P. ponderosa*) by the caterpillar of a butterfly (*Pieris menapia*). The details will be published in the Proc. Boston Nat. Hist. Soc. Small flies were very numerous around the chrysalids and caterpillars ready for pupation. These flies were so eager and so little shy, that they could be almost taken with the hands. They proved to be the "black fly" (*Simulium*). There is scarcely any doubt, that they live on the defenceless chrysalis, probably sucking the tail, as I found among the alcoholic specimens some flies still hidden in the dense tail-silk. The fresh chrysalis is rather lively. One on a young shoot of pine made the most convulsive motions, when only a leaf was touched. The end of the tail would be just the spot most difficult to defend against disturbance from an enemy. Perhaps, the curious fact that the numberless chrysalids in the crevices of the pine trees were all hanging down, instead of being erect and kept in this position by a thread around the body, may be the consequence of the constant attacks by these flies. The threads may have been finally broken by constant convulsions. The circumstance that a large number of the chrysalids were dry and dead without containing parasites, speaks in favour of the supposition, that they have been emptied by the constant sucking of *Simulium*. It is generally accepted, that *Simulium* lives only on warm-blooded animals. But it is obvious that these millions of little flies would, in this case, have no chance of food. Large animals shun as much as possible such places where *Simulium* swarms in the day time, and smaller animals are certainly not so common as to be sufficient for their food. If it is accepted that *Simulium* can live on insect-blood—and there is, indeed, no reason to doubt it—at once their existence is easily understood. May this not be the same with mosquito females? The species of *Simulium* seems to be identical with the common New England "black fly," but as this species is still undescribed, a detailed comparison has to be made to decide about the identity. It was, indeed, wonderful, that our whole party of five men and eight horses were not molested at all by the flies on those places, though they were more than annoying in other places where the butterfly was wanting. The seemingly strange assumption that *Simulium* may feed on caterpillars and chrysalids is corroborated by the discovery that *Pulex irritans* feeds upon caterpillars (Entom. xv, p. 70). The stomach fluids of the fleas were

found by Mr. Boden transparent, and not red in colour, as when they have fed upon mankind. Those larvæ which had been attacked by the fleas appeared to pine away and die.

Perhaps, *Acræa Thalia*, in Brazil, and *A. Vesta*, in the Himalaya, are attacked in the same manner as *P. menapia*. Of both I have received very large numbers, collected at Cantagallo and Kooloo. The chrysalids were bundled together, as in *P. menapia*, and also partially dry—perhaps, from the same cause.

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ON SOME AUSTRALIAN *PHYCIDÆ*.

BY E. MEYRICK.

It seems advisable to publish at once the following additional notes to my list of Australian *Phycidæ*, in view of M. Ragonot's forthcoming monograph of the group.

Zophodia ensiferella, Meyr. The ♀ has the fore-wings narrower, paler, and redder than in the ♂, the hind-wings whitish instead of grey, and the abdomen very elongate and curiously depressed posteriorly.

Cateremna leucarma, Meyr. The larva forms true galls on shrubs of *Eucalyptus oleosa*; the galls are long, irregularly cylindrical, apparently formed of a metamorphosed cluster of leaves.

Salebria gypsopa, *n. sp.*

♂ ♀. 17—21 mm. Head dull white. Palpi whitish, sprinkled on sides with dark fuscous; maxillary tufts of ♂ ochreous. Antennæ grey, annulated with paler. Thorax white, sprinkled with dark fuscous. Abdomen whitish-ochreous. Anterior tibiæ dark fuscous, apex whitish; middle and posterior tibiæ whitish, sprinkled with dark fuscous, with a dark fuscous sub-apical ring; all tarsi dark fuscous, with whitish rings at apex of joints. Fore-wings elongate, narrow, gradually dilated, costa nearly straight, arched towards apex, hind-margin obliquely rounded; white, irregularly clouded with pale ochreous, and irrorated with dark fuscous; first line oblique, slightly curved, double, dark fuscous, enclosing a whitish line, forming a white spot on costa, inner edge broadly dark fuscous, deepest towards costa, outer edge slender, broken or indistinct; an elongate dark fuscous suffusion along middle third of costa; a black dot in disc beyond middle, situated on lower margin of a short, longitudinal, clear, white streak; second line double, dark fuscous, enclosing a whitish line, margins well-defined, faintly dentate, shortly angulated inwards above middle, outwards in middle, and again inwards above inner margin, posterior edge broader and more suffused towards costa; hind-margin suffusedly dotted with dark fuscous; cilia whitish, with four irregular fuscous-grey lines. Hind-wings pale ochreous-grey, with a suffused dark fuscous hind-marginal line; cilia whitish, with a fuscous-grey line near base.